

ADDITIONS TO *DOROBAEA* AND *TALAMANCALIA* (COMPOSITAE-SENECIONEAE)

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Abstract

Three new combinations are published, viz. *Dorobaea laciniata* (H.B.K.) B. Nord. & Pruski, *D. callacallensis* (Cuatr.) B. Nord. & Pruski, and *Talamancalia putcalensis* (Hieron.) B. Nord. & Pruski, raising to three, the number of species in each genus (both of the Compositae-Senecioneae). *Talamancalia* is a new generic record for South America, and was previously known only from Panama and Costa Rica. Keys to the species of *Dorobaea* and *Talamancalia* are provided.

Dorobaea Cass.

In 1818 Humboldt, Bonpland, and Kunth described *Senecio pimpinellifolius* and three other closely related species (*S. nubigenus* H.B.K., *S. pedicularifolius* H.B.K., *S. laciniatus* H.B.K.), all from the Ecuadorian Andes (Humboldt et al. 1818). The authors were struck by the distinctive habit of these taxa and suggested that they might constitute a separate genus ("*an generis distincti*"). This idea was readily adopted by Cassini (1827), who established the new genus *Dorobaea* for *S. pimpinellifolius* and its allies, without making any actual combinations, however. Bentham (Bentham & Hooker 1873) and later authors kept these taxa in the continuously over-expanding concept of *Senecio*, until the genus *Dorobaea* was revived by Nordenstam (1978). Jeffrey (1992) did not accept the genus as distinct from *Senecio*, but Bremer (1994)

followed Nordenstam in separating *Dorobaea*. Recent molecular studies confirm the distinctness of *Dorobaea* (Kadereit & Jeffrey, in press). Nordenstam in 1978 provisionally recognized one polymorphic species, *D. pimpinellifolia* (H.B.K.) B. Nord., citing the three other related species as synonyms, and mentioning *S. callacallensis* Cuatr. from Peru as probably belonging to the same alliance.

We now present a slightly revised concept of species taxonomy in *Dorobaea* and make the formal transfers of *S. laciniatus* and *S. callacallensis* to this genus.

Dorobaea is a small Andean genus centered in Ecuador and with extensions into southern Colombia and northern Peru. Its species have a distinctive habit, being rosulate scapose herbs with conspicuous yellow or orange-coloured radiate solitary capitula. The disc-floret corolla is long-tubular, gradually widening towards the five-lobed apex, and the lobes are erect, narrowly ovate to lanceolate with a median resin duct, which may be more or less distinct. The style branches have a convex or shortly and obtusely conical tip surrounded by sweeping-hairs and sometimes provided with a short apical hair tuft, and the inner surface of the style branches have paired parallel stigmatic lines. The genus may comprise around five species, but at this stage we restrict ourselves to recognizing three species, which are keyed as follows.

Key to the species of *Dorobaea*

1. Leaf-blade lanceolate to narrowly elliptic or lorate, lobes obtuse or rounded, often close or even overlapping; florets yellow 1. *D. pimpinellifolia* (H.B.K.) B. Nord.
- Leaf-blade ovate or elliptic-oblong; florets orange or sometimes yellow 2
2. Leaf-blade deeply lobed (to or almost to rachis), most lobes >1 cm long, distantly spaced from each other 2. *D. laciniata* (H.B.K.) B. Nord. & Pruski
- Leaf-blade shallowly lobed (to less than 1/2), lobes <1 cm long, closely spaced 3. *D. callacallensis* (Cuatr.) B. Nord. & Pruski

1. *Dorobaea pimpinellifolia* (H.B.K.) B. Nord., Opera Bot. 44: 53 (1978). - Type: In herb. Humboldt & Bonpland (P). - Figs. 1, 3 A-B.

Senecio pimpinellifolius ("*pimpinellaefolius*") H.B.K., Nov. Gen. Sp. Pl. (folio ed.) 4: 136, tab. 364 (1818).

S. nubigenus H.B.K., loc. cit.; *S. pimpinellifolius* H.B.K. var. *nubigenus* (H.B.K.) Hieron., Bot. Jahrb. Syst. 28: 634 (1901).

S. pediculariifolius ("*pedicularifolius*") H.B.K., Nov. Gen. Sp. Pl. (folio ed.) 4: 135 (1818).

As recognized here *D. pimpinellifolia* is a quite variable species, especially in leaf shape and division. Also pubescence of involucre base and cypselas is variable. Usually the cypselas are shortly and appressedly white-hirsute (puberulous when immature), but some collections have quite glabrous cypselas. Phenotypic plasticity seems to be considerable, and plants are apparently strongly modified by altitude, exposition to light, and soil moisture.

This species is widely distributed along the cordillera of Ecuador at elevations between 2300 and 4200 m, where it grows in cloud forest, scrubland and grass páramo, from dry soil to streamsides and bogs. It is also recorded from southern Colombia.

2. *Dorobaea laciniata* (H.B.K.) B. Nordenstam & J. Pruski, comb. nov.

Basionym: *Senecio laciniatus* H.B.K., Nov. Gen. Sp. Pl. (folio ed.) 4: 137 (1818); *S. pimpinellaefolius* H.B.K. β *laciniatus* (H.B.K.) Wedd., Chlor. And. 1: 124 (1856); *S. pimpinellifolius* H.B.K. var. *laciniatus* (H.B.K.) Hieron., Bot. Jahrb. Syst. 28: 634 (1901). - Type: In herb. Humboldt & Bonpland (P, photo US! IDC microfiche 6209, card 105.II.3!). - Figs. 2, 3 C-D, 5.

This species has a distinctive leaf shape, purple petiole bases and characteristically orange corollas. It has a more southerly distribution than the preceding species, in southern Ecuador (Loja Province), where it occurs at 2000 to 2500 m, on dry slopes. Two collections from Chachapoyas in northern Peru (Hutchison & Wright 4478, represented in 20 herbaria, King & Bishop 9203, US) also seem to belong here, although the rays are stated to be yellow. The southernmost record is A. López 857 (US) from Peru, La Libertad, Otuzco, Agallpampa, 3100 m. Other Peruvian specimens from Cajamarca in the Province of Celendin (Hutchison & Wright 5211) also come close, but differ by the densely villous and short petioles. The specimens from Cajamarca and La Libertad agree with *D. laciniata*, however, in the purple petiole bases and orange corollas.

All specimens of *D. laciniata* examined have pubescent cypselas.

3. *Dorobaea callacallensis* (Cuatr.) B. Nordenstam & J. Pruski, comb. nov.

Basionym: *Senecio callacallensis* Cuatr., Proc. Biol. Soc. Wash. 77: 151 (1964). - Type: Peru, Dep. Amazonas, Prov. Chachapoyas, middle E Calla-Calla slopes, near

Kms. 416-419 of Leimebamba–Balsas road, 2900–3100 m, 9 July 1962, Wurdack 1277 (US holotype! NY isotype!). – Figs. 3 E-F, 5.

This species is easily recognized by the shallowly lobed, ovate leaf-blades. Petiole and scape are basally purple or lavender and the corollas are described as yellow in the type, and most other collections, but orange in one single collection less than 20 km from the type locality, viz. Boeke 1967, at km 399 of the same road (NY). The species is restricted to northern Peru. Further collections seen are: Peru, Dep. Amazonas, Prov. Chachapoyas, Cerros Calla Calla, 18 km above Leimebamba on rd. to Balsas, 3100 m, 7 June 1964, Hutchison & Wright 5587 (US); Dep. Amazonas, Prov. Chachapoyas, between Leymebamba and Calla-Calla, 2820 m, 27 May 1984, Smith & Cabanillas 7164 (MO, US); Cajamarca, Cutervo Prov., San Andrés de Cutervo, Parque Nacional de Cutervo, "Jalca" camino a la Laguna "El Pileo", 2680 m, 15 Mar. 1989, Díaz, Beltrán & D'Achille 3310 (MO, US); Dep. Cajamarca, Cutervo Prov., Co. Hucan, Cutervo, 2850 m, 24 Jan. 1959, Velarde Nuñez 7147 (US); Dep. Amazonas, Prov. Pongará, Dist. Yambrasbamba, ca. 40 km N of Jumbilla, across R. Chiriaco from Yambrasbamba, 1860–2000 m, 2-26 Mar. 1967, S. S. Tillett 673-331 (US).

Talamancalia H. Rob. & Cuatr.

Another species with an anomalous position in *Senecio* is the Ecuadorian *S. putcalensis* Hieron., which we now refer to the genus *Talamancalia* H. Rob. & Cuatr.

Senecio putcalensis matches *Talamancalia* by leaf-blades basally deeply lobed, by petiole bases commonly winged, by calyculate heads with many phyllaries, by orange corollas, by elongate and keeled anther apical appendages with somewhat thickened margins, by disc-floret corollas long-tubular with erect lobes, by similar style branch apices, and by ca. 8-ribbed pubescent cypselas without a strong carpodium. This marks the first report of *Talamancalia* in South America.

Talamancalia was recently described (Robinson & Cuatrecasas 1994) to accommodate two species from Costa Rica and Panama, respectively. The genus is close to the widespread neotropical genus *Pseudogynoxys*, which ranges from Mexico and the West Indies to Argentina with a concentration of species along the cordilleras of Peru, Ecuador and Colombia (Robinson & Cuatrecasas 1977). *Pseudogynoxys* comprises 14 species, which are vines or scrambling herbs, characterized *inter alia* by a pointed and penicillate tip to the style branches of disc-florets. The alternate petiolate leaves are generally entire with dentate to denticulate or entire margins, but a species with lobate leaves is being described from Brazil and Bolivia as *P. lobata* (Pruski in press).

Another related genus is *Garcibarrigoa* Cuatr., a monotypic genus from northern Ecuador and southern Colombia (Cuatrecasas 1986). It is apparently close to *Pseudogynoxys*, differing mainly by the conspicuous, completely sheathing pseudostipules,

and the non-scandent habit. Turner (1991) included *Garcibarrigoa* in *Pseudogynoxys*, but the genus was kept separate by Jeffrey (1992) and Bremer (1994). Robinson and Cuatrecasas (1994) again advocated its separation, and we share this view.

Talamancalia differs from *Pseudogynoxys* by the non-scandent habit, winged petioles with basally pseudostipular appendages, the obtuse to rounded disc-floret stylar tips with mainly lateral and apical, rather short sweeping-hairs, and the thickish and usually or perhaps always mucilaginous cypselar hairs. *Talamancalia* has some traits in common with *Garcibarrigoa*, including the non-scandent habit. *Garcibarrigoa* is very distinct, however, by its conspicuous and completely sheathing pseudostipules, and by its entire leaves with a strong and close venation and hirsute and dentate margins. In style morphology *Garcibarrigoa* comes closer to *Pseudogynoxys* than to *Talamancalia*, the style branch tips having longer and more pointed tufts of sweeping-hairs.

A key to the three known species of *Talamancalia* is presented below.

Key to the species of *Talamancalia*

1. Capitula 8–15 in each cyme; leaf-blades lobed only at very base (Panama) *T. boquetensis* (Standl.) H. Rob. & Cuatr.
- Capitula 1–4; leaf-blades lobed in the lower half 2
2. Leaves white-tomentose below; capitula 2–4 in terminal cymes on peduncles <1 cm long; calycular bracts ovate (Costa Rica)
..... *T. westonii* H. Rob. & Cuatr.
- Leaves sparsely pubescent below; capitula solitary on peduncles 2–20 cm long; calycular bracts linear-lanceolate (Ecuador)
..... *T. putcalensis* (Hieron.) B. Nord. & Pruski

Talamancalia putcalensis (Hieron.) B. Nordenstam & J. Pruski, comb. nov.

Basionym: *Senecio putcalensis* Hieron., Bot. Jahrb. Syst. 28: 634 (1901). - Type: Ecuador, Pucala near Loja, 1800–2400 m, Oct. (year not given), Lehmann 8007 (B holotype, destroyed, photograph US!; K lectotype! selected here, K isotype!). - Figs. 4, 5.

A second Lehmann collection (s. n.) from the same area is known, viz., Las Juntas near Loja, steep rocks, 2000–2400 m, 1890 (K). A third collection is from Ecuador, Río de Gimanche, s. d., E. André s.n. (K, US). This locality could not be located on maps or in gazetteers available to us, nor is it listed in Smith (1965). The species has

not been recollected in this century in spite of rather intense collecting in southern Ecuador in the last decades.

Talamancalia putcalensis is apparently rare and local, and apart from the indication of a rocky habitat its ecology and present conservation status are unknown. The disjunction between the Ecuadorian species and the Central American representatives may seem remarkable, but could be related to the chasmophytic habit. We think it not unlikely that a member of *Talamancalia* may turn up in some rocky habitat of Colombia.

Acknowledgements

We wish to thank Michael Dillon (F) and José Cuatrecasas (US) for pointing out the need to transfer *Senecio putcalensis* out of that genus.

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Legend to illustrations

Fig. 1. *Dorobaea pimpinellifolia* (H.B.K.) B. Nord., as illustrated in Humboldt, Bonpland & Kunth, Nov. Gen. Sp. Pl. 4, Plate 364 (1820).

Fig. 2. *Dorobaea laciniata* (H.B.K.) B. Nord. & Pruski. - A: Habit, x 0.4. - B: Ray-floret, x 2.5. - C: Disc-floret, x 2.5. - D: Corolla of disc-floret, laid out, x 5. - E: Multicellular trichome from disc-floret corolla, x 70. - F: Anthers, x 10. - G: Style branches from disc-floret, x 10. - H: Multicellular trichome from ray-floret, x 30. - Cypselar twin hairs, x 70. - Harling 1508 (S). Del. B. Nordenstam.

Fig. 3. Leaf-shapes in *Dorobaea pimpinellifolia* (H.B.K.) B. Nord. (A–B), *D. laciniata* (H.B.K.) B. Nord. & Pruski (C–D), and *D. callacallensis* (Cuatr.) B. Nord. & Pruski (E–F), x 1/2. - A: Sparre 15811 (S), B: Nordenstam & Lundin 208 (S), C: Holm-Nielsen et al. 4731 (S), D: Nordenstam & Lundin 78 (S), E: Wurdack 1277 (NY), F: Boeke 1967 (NY). Del. B. Nordenstam.

Fig. 4. *Talamancalia putcalensis* (Hieron.) B. Nord. & Pruski. - A: Habit, x 0.4. - B: Ray-floret, x 2.5. - C: Disc-floret, x 2.5. - D: Corolla of disc-floret, laid out, x 5. - E: Anthers, x 5. - F: Style branch of disc-floret, x 10. - Lehmann 8007 (K type). Del. B. Nordenstam.

Fig. 5. Distributions of *Dorobaea callacallensis* (Cuatr.) B. Nord. & Pruski, *D. laciniata* (H.B.K.) B. Nord. & Pruski, and *Talamancalia putcalensis* (Hieron.) B. Nord. & Pruski.

Tab. 564.



Senecio pimpinellaefolia

SENECIO *pimpinellaefolia*.

de l'Empire de Russie

Fig. 1

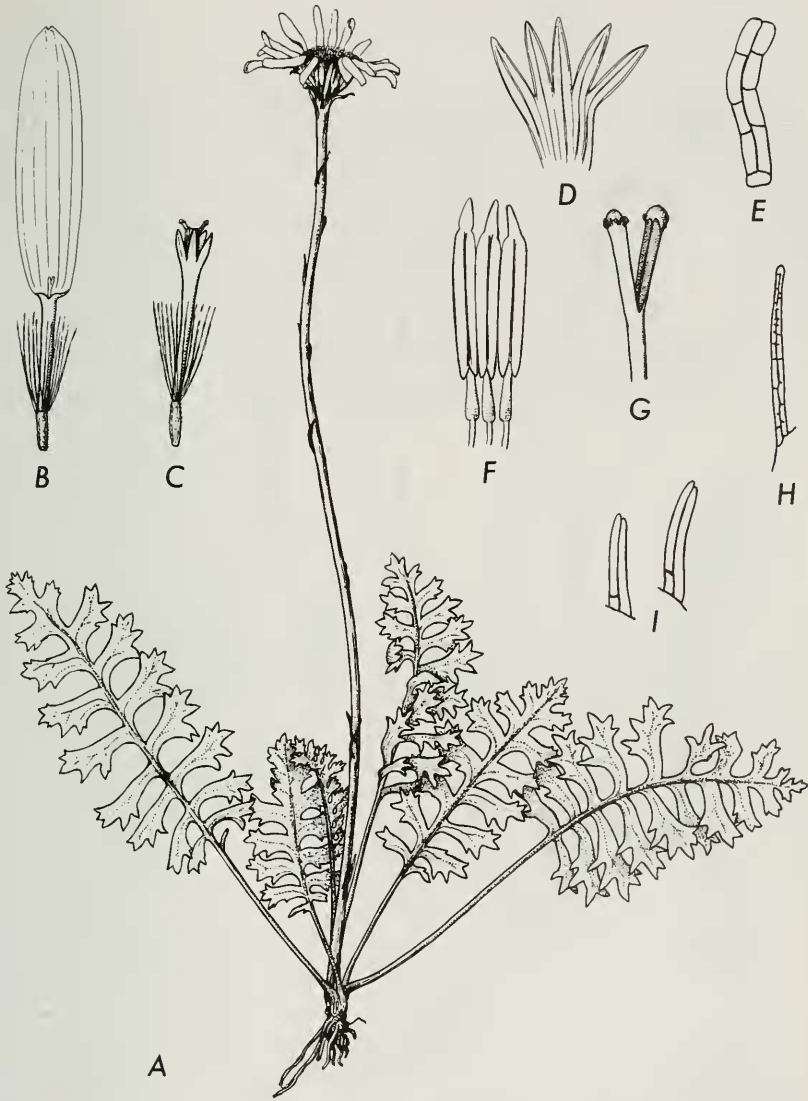


Fig. 2

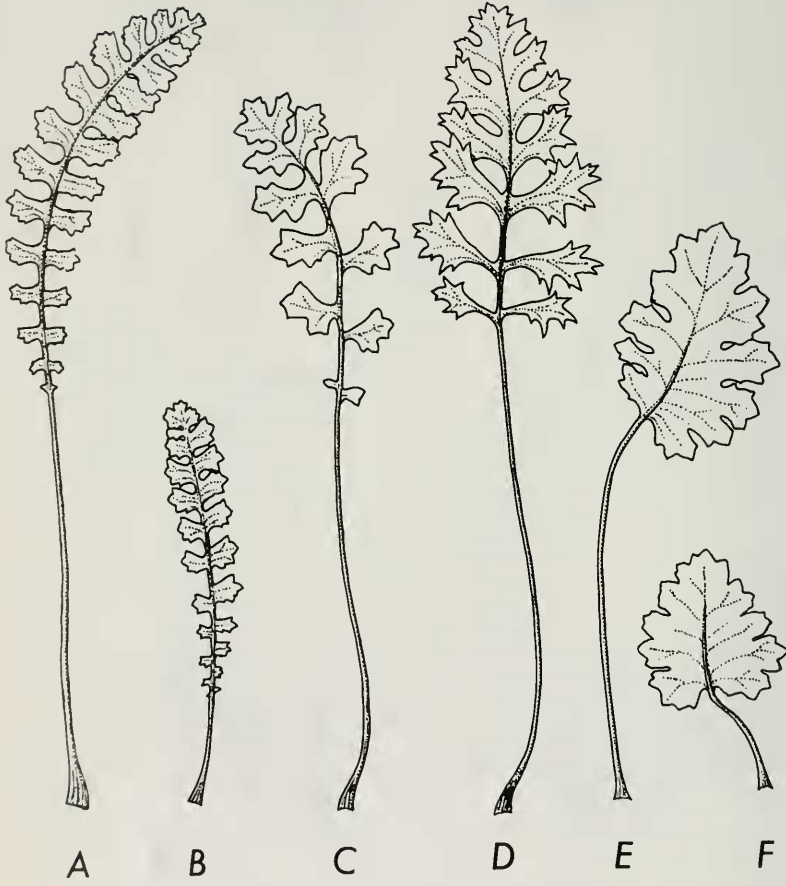


Fig. 3

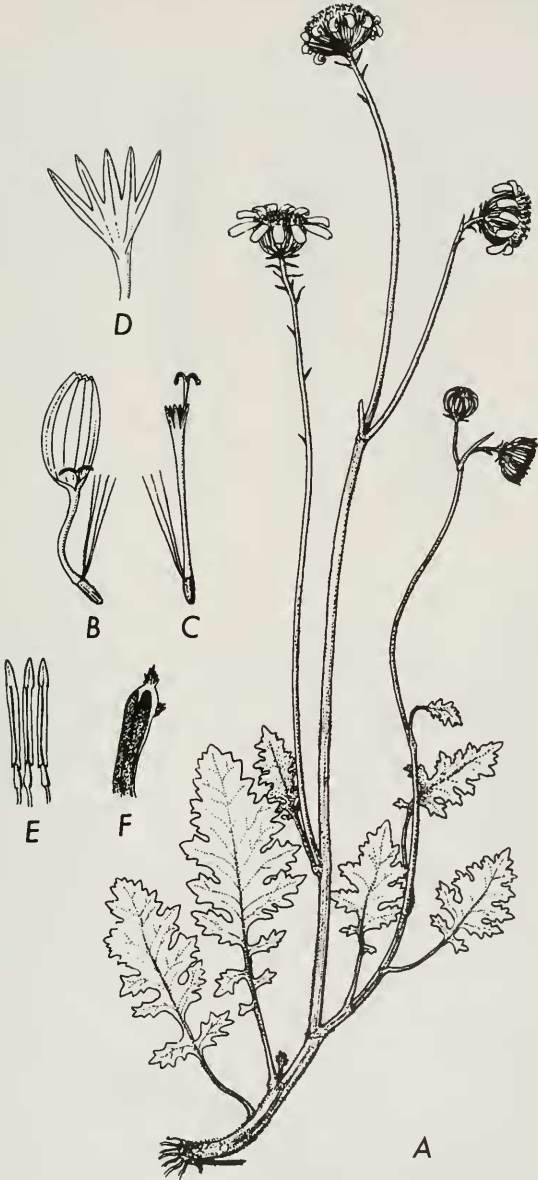


Fig. 4

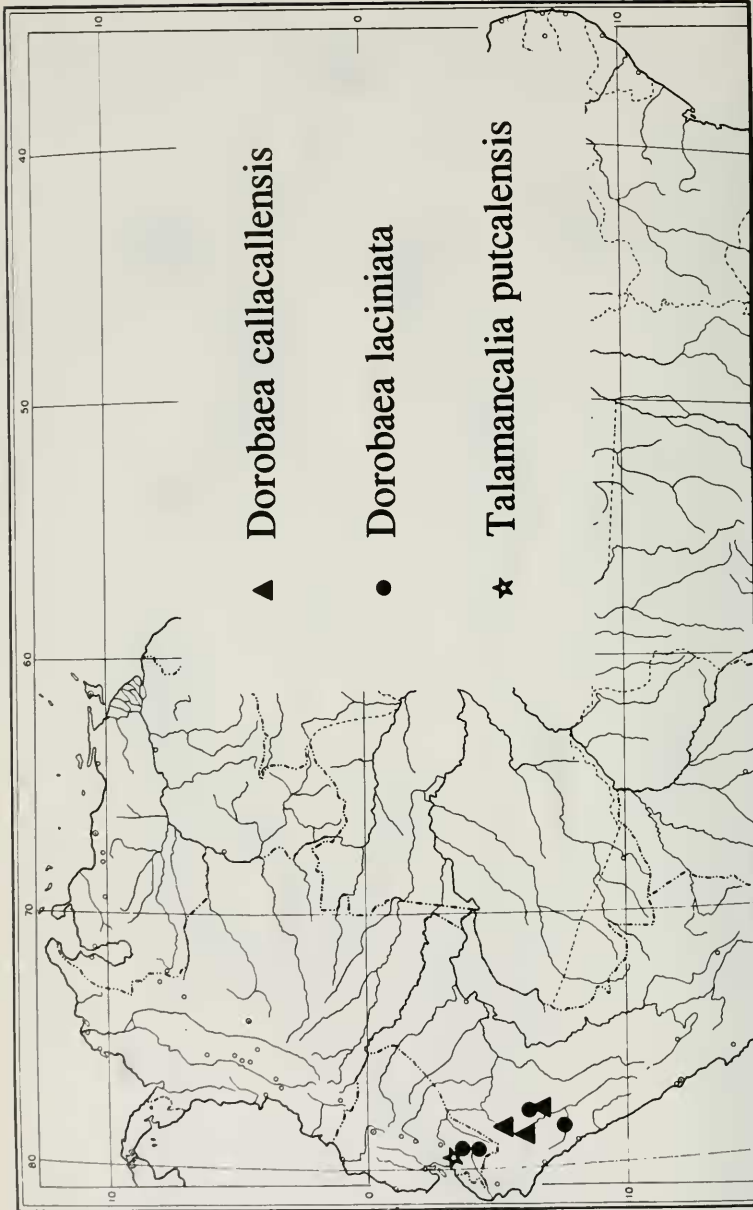


Fig. 5